



## FABRICATION MANUAL

*\*ElementAI recycled surfacing should only be fabricated and installed by qualified Solid Surface professionals.*

### General Product Description:

ElementAI is a composite incorporating various metallic chips and recycled acrylic.

General fabrication and installation methods are similar to conventional solid surface materials. However, ElementAI requires slightly unique fabrication techniques. The following fabrication manual addresses specific methods pertaining to the fabrication and installation of **ElementAI**.

### Table of Contents:

General Specifications	1
Fabrication Methods	1
General Methods	4
Caution + Care	5
Noted Safety Precautions	5

## GENERAL SPECIFICATIONS

ElementAI Surfaces are offered with a factory standard clear coat on the face, and is finished to an 800-grit wet, final surface sheen to be achieved by the fabricator, from matte to high gloss.

Sheets are offered in 36" x 72", 36" x 96" and 48" x 96" – ½" thick.

## FABRICATION METHODS

### Description:

ElementAI offers a factory smooth surface treatment. Surface seams of the products can be sanded and polished similar to conventional Solid Surface materials. Final surface finish results, from satin to high-gloss, can be achieved by further polishing steps to be performed by the fabricator.

### Cutting:

ElementAI can be cut and shaped using conventional woodworking machinery and tools such as saws and routers, including CNC machines. As with all acrylic composites, the use of sharp carbide-tipped saw blades, router bits and compression CNC bits at a high speed and a moderate feed rate are essential or material will melt or gum up. We suggest spraying the area with water while cutting, if trimming more than ¼" of material off.

### Horizontal Flat Surface Seaming:

The seaming for horizontal joints is performed using clear or matching color Methacrylate adhesive. Please follow these step-by-step instructions to achieve quality seam results:

### **Step 1: Edge preparation**

The following edge preparation steps are recommended to achieve inconspicuous seams.

Machine cut edges to be seamed flat and smooth. Using biscuit inserts, align the tops of the surfaces to be seamed level and flush.

Thoroughly clean edges to be seamed with Alcohol Solvent, using a clean rag.

*CAUTION: The joining edges must make full edge- to-edge contact of the glue surfaces to prevent noticeable seam line. Do not machine a glue trough or gutter to hold access adhesive, as you can with conventional solid surface techniques, because this technique will eliminate the aluminum filler, resulting in a noticeable clear adhesive-filled seam line.*

### **Step 2: Preparation of the parts for adhesive application**

Lay the sheets on a flat horizontal work surface, bringing the two machined edges together.

Leave the parallel edges to be seamed apart to allow the adhesive nozzle to fit between them (approximately ¼" to 3/8").

*TIP: To avoid contaminating the work area, place a disposable surface protector under the seam area, such as clear tape or other similar material.*

### **Step 3: Adhesive application techniques**

One of the following two adhesive application methods are suggested:

Option #1) Apply two beads of adhesive from the dispensing nozzle, one on top of the other, into the ¼" to 3/8" gap, entire length of the seam. Push the two panels together to squeeze out seaming compound onto the surface. To achieve a tight joint, bar clamps or straps may be used to apply slight pressure on the seam. Do not wipe to remove the surplus adhesive compound from the surface. Allow the seam with access adhesive to harden, approximately 2 hours at 77 degrees F (22 degrees C).

Option #2) Dispense adhesive and catalyst mixture from cartridge onto a disposable plastic laminate scrap and mix the two parts together thoroughly using a putty knife or similar spatula tool. Using the spatula, apply a layer of the mixed adhesive directly onto the two edge surfaces. Next, push the two panels together to squeeze out seaming compound onto the surface. Bar clamps or straps may be used to apply slight pressure on the seam. Allow the seam to harden, approximately 2 hours at 77 degrees F (22 degrees C).

### **Step 4: Seam reinforcement**

As with conventional solid surface seaming techniques, a support strip, approximately three to four inches wide, should be adhered using methacrylate adhesive from the backside of the seam, and should be the entire length, to prevent failure of the seam.

#### **Edge Options:**

Various edge fabrication options can be achieved, including mitering (V Folding) and multiple layering and build-up.

#### **Mitering Option:**

Mitering is a labor-saving alternative edge treatment option. Mitering avoids the steps necessary for build-up or layering. Mitering also ensures that the edge surface matches the panel surface. Please follow these step-by-step instructions to achieve quality miter edge seam results:

**Step 1:** Bevel cut or “V” groove parts to be glued together at a 45° angle. Take proper protective measures to avoid the chipping or damaging of the resulting sharp edges of the parts.

**Step 2:** Apply adhesive to the contact surfaces using Adhesive Application Technique – Option #2 (see above) and join firmly together, forming a 90° angle. The two sections may be pulled together and held in place temporarily using masking tape. Wipe off excess glue compound from the finish surfaces using Alcohol Solvent and soft rag. Allow adhesive to cure and harden.

*TIP: Masking tape can be used to act as hinges to assist in the folding and holding of the two parts together during the gluing process. Laying the sheets flat and prior to adhesive application, apply strips of tape as necessary, perpendicular to the seam, from the bottom or to the finished surface of the parts. Apply adhesive as instructed, fold the two parts perpendicular at 90°.*

**Step 3:** Using fine tooth steel file or fine grit sandpaper, dull the resulting sharp outside corner of the miter joint.

**Step 4:** Using seaming adhesive, apply a strip piece along the length of the miter joint from the back side to strengthen and reinforce the joint.

#### **Layering and Build-up Option:**

Please follow these step-by-step instructions to achieve quality layering or build-up edge seam results:

**Step 1:** Preparation: **Course sand** the contact surfaces of the parts to be glued together to expose the aluminum filler. This will ensure inconspicuous seam results.

**Step 2:** Apply thoroughly mixed seaming compound (Methacrylate) to contact surfaces of the parts to be layered.

**Step 3:** Stacking the layers together, apply frequent pressure on the entire length of the seam, using hand or “C” clamps approximately 2 to 3 inches on the center. Allow the excess adhesive compound to over-flow and cure.

**Step 4:** Proceed with sanding and polishing of the edge surface, or machine the desired edge profile.

#### **Edge Sanding and Finishing Procedures:**

To achieve high-quality surface finish results of the edges, please follow one of the procedures outlined below:

##### Dry and Wet Process:

Follow these dry, then wet, sanding steps, using 3M abrasives (or equal), in sequence as noted, using water to liberally wet abrasives on a random orbital sander. Wash and remove all residue from material surfaces between each of the following steps:

**Step 1:** #150 grit – film back abrasive

**Step 2:** #220 grit – film back abrasive

**Step 3:** #320 grit – film back abrasive

**Step 4:** Buff with Lambs wool Buffing pad (2500 RPM)

## GENERAL METHODS

### Repairs:

Most damage can be repaired easily, following the basic coating and sanding instructions above. Minor scratches can be eliminated by sanding and polishing, as above. Heavy scratches or deep surface chipping may require repairs using catalyzed acrylic resin coating. To repair such damage, begin by cleaning damaged area with Alcohol Solvent. Following the instructions provided with the two-part acrylic resin coating, mix and pour filler to fill slightly above the finished surface and allow to cure. Proceed with sanding and polishing using a random orbital sander, as per Sanding and Finishing instructions.

### Cut outs:

For general cut outs, use a router with a 1/2" double flute, carbide straight bit to follow the clamped cut out template. Inside corner radius must be as large as possible (1/4" minimum). Exposed cut out edges may be sanded and polished using the finishing steps as described.

### Installation:

Horizontal application: ElementAl should always be installed over a full area of sub-straight surface such as plywood or particle board for proper support. Such sub-straight should be vertically supported at every 30 to 36 inches on center to avoid bowing of the horizontal plain. ELEMENTAL should never be installed without the use of a sub-straight from below.

Adhering to substrate: Use of flexible neoprene or silicone adhesive recommended to allow for movement and expansion

Expansion and Contraction: ElementAl may expand and contract, depending on changes in environmental temperatures. Follow these guidelines to ensure proper space allowances for expansion:

**Cut outs:** Allow 1/4" expansion space on all sides.

**Installation:** Allow 1/8" expansion space for every 10 feet, linear.

Vertical application: ElementAl should be applied to vertical surfaces using "Z clips" or similar vertical attachment hardware. Hardware connections to ELEMENTAL should be made using circular plug inserts into ElementAl and Methacrylate adhesive. The frequency of the hardware and clips will vary depending on the design intentions.

Tabletop application: For furniture and table surfaces, ElementAl may be adhered to substrate using 100% Silicone Adhesives. Suggested products are as follows:

PL200 or 400 Liquid Nail  
MT-13 Strongest (White)  
EA-40 (Clear)

Above adhesives may be obtained online at [www.smooth-on.com/epoxy.htm](http://www.smooth-on.com/epoxy.htm).

## CAUTION AND CARE

### Important Guidelines:

To avoid stress cracking, the following guidelines are essential:

- Provide adequate, full coverage, level and straight sub-support from below for all installations.
- Allow for proper expansion and contraction space on all sides of the installation as recommended.
- Avoid inside cut outs with sharp corners. Always cut inside corners with a minimum of 1/4" radius.
- Always use sharp carbide tipped blades for machining to avoid chipping, cut at Moderate speeds.
- Always glue full length support backing strips from below, using the same material, at all seams.
- Always glue support backing blocks, using the same material at corners of cut outs where weight will be placed from above, such as drop in cook tops and sinks.

## NOTED SAFETY PRECAUTIONS TO FABRICATOR

### Safety:

- ELEMENTAL should only be fabricated and installed by qualified solid surface professionals, properly trained in the safety and fabrication methods that are accepted by industry standards of the ISFA and ICPA.

- During fabrication, always use proper safety glasses for eye protection, dust mask and ear protection during cutting, sanding and handling of ElementAl.

- Only use proper tools and machinery for fabrication, supported by dust collection equipment, as required by OSHA guidelines.

- Gloves and safety shoes should be worn at all times when handling or transporting material, to prevent cuts and abrasion.

### Health Hazards (Acute and Chronic):

- This product produces nuisance particulate as identified by ACGIH and OSHA. During fabrication operations such as sawing, machining, sanding or routing, cured resin dust and aluminum particulate are generated.

- This product does not contain regulated levels of NTP, LARC, or ASHA listed carcinogens.

- This product is not hazardous in normal use.

### Exposure Control Methods:

- Provide sufficient ventilation and dust pick-up at saw, sander, drill or router to keep dust levels below 10mg/cubic meter TWA or provide and make mandatory the wearing of NIOSH approved dust respirators.

### Waste Disposal Methods:

- Scrap material and dust may be disposed of according to applicable Federal, State, and Local regulations. This is a non-hazardous product.